

WHAT IS CLAIMED IS:

1 1. An expansible device for use in a body lumen or tract, the device
2 comprising:

3 a tubular member having a proximal end and a distal end;
4 an expansible member disposed on the distal end of the tubular member, the
5 expansible member having a contracted configuration and an expanded configuration
6 comprising a conical shape; and
7 a deformable membrane at least partially disposed over the expansible
8 member in the expanded configuration.

1 2. The device of claim 1, further comprising deployment means
2 coupleable to the proximal end of the tubular member, wherein the expansible member
3 includes a straight portion extending from an apex of the conical shape to the deployment
4 means.

1 3. The device of claim 1, wherein the expansible member comprises a
2 coil or spring of wire.

1 4. The device of claim 3, wherein the wire has a diameter in a range from
2 about 0.005 inch to about 0.012 inch.

1 5. The device of claim 3, wherein the coil or spring comprises 1 to 10
2 loops, wherein a height between the loops is in a range from about 0.1 inch to about 0.5 inch.

1 6. The device of claim 1, wherein the expansible member comprises
2 superelastic material or shape memory material.

1 7. The device of claim 1, further comprising a reference stop disposed
2 between the deformable membrane and the distal end of the tubular member so as to control
3 an angle of deflection of the membrane relative to the tubular member.

1 8. The device of claim 1, further comprising an additional expansible
2 member disposed proximal the expansible member on the distal end of the tubular member,
3 the additional expansible member having a contracted configuration and an expanded
4 configuration comprising a cylindrical shape.

1 9. A method for sealing a puncture site:
2 providing an expansible device having a tubular member, an expansible
3 member disposed on a distal end of the tubular member moveable between a contracted
4 configuration and an expanded configuration, and a deformable membrane at least partially
5 disposed over the expansible member in the expanded configuration;
6 inserting the expansible device in the puncture site;
7 deploying the expansible member to an expanded configuration comprising a
8 conical shape.

1 10. The method of claim 9, wherein the expansible member includes a
2 straight portion extending from an apex of the conical shape which is oriented away from the
3 puncture site.

1 11. The method of claim 10, further comprising applying proximal tension
2 to the straight section so that the expansible member is deformed into a disk shape
3 configuration.

1 12. The method claim 11, further comprising applying increased proximal
2 tension to the straight section so that the expansible member is deformed into an inverted
3 conical shape configuration wherein the apex of the conical shape is oriented toward the
4 puncture site.

1 13. The method of claim 9, wherein the puncture site comprises a blood
2 vessel wall or tissue tract.

1 14. An expansible device for use in a body lumen or tract, the device
2 comprising:
3 a tubular member having a proximal end and a distal end;
4 an expansible member disposed on the distal end of the tubular member, the
5 expansible member having a contracted configuration and an expanded configuration;
6 a deformable membrane at least partially disposed over the expansible
7 member in the expanded configuration; and
8 a reference stop disposed between the deformable membrane and the distal
9 end of the tubular member.

1 15. The device of claim 14, wherein a proximal end of the deformable
2 membrane is attached to the tubular member just proximal of the reference stop.

1 16. The device of claim 14, wherein the reference stop comprises a
2 hypotube having a length in a range from about 0.01 inch to about 0.2 inch, an inner diameter
3 slightly larger than an outer diameter of the tubular member, and an outer diameter in a range
4 from about 0.001 inch to about 0.02 inch larger than the outer diameter of the tubular
5 member.

1 17. The device of claim 14, wherein the deformable membrane comprises
2 a spherical shape when the expansible member is in the expanded configuration.

1 18. The device of claim 14, further comprising an additional expansible
2 member disposed proximal the expansible member on the distal end of the tubular member,
3 the additional expansible member having a contracted configuration and an expanded
4 configuration comprising a cylindrical shape.

1 19. An expansible device for use in a body lumen or tract, the device
2 comprising:

3 a tubular member having a proximal end and a distal end;

4 a first expansible member disposed on the distal end of the tubular member,
5 the first expansible member having a contracted configuration and an expanded
6 configuration;

7 a first deformable membrane at least partially disposed over the first
8 expansible member in the expanded configuration;

9 a second expansible member disposed proximal the first expansible member
10 on a distal end of the tubular member, the second expansible member having a contracted
11 configuration and an expanded configuration.

1 20. The device of claim 19, wherein the second expansible membrane has
2 a cylindrical shape in the expanded configuration.

1 21. The device of claim 20, wherein a predetermined volume of air
2 contained within the tubular member inflates the second expansible member so as to provide
3 at least one of radial or axial expansion.

1 22. The device of claim 20, wherein the second expansible member
2 comprises a coil or spring of wire.

1 23. The device of claim 22, wherein the coil has a diameter in a range from
2 about 0.02 inch to about 0.2 inch and the wire has a diameter in a range from about 0.005
3 inch to about 0.02 inch.

1 24. The device of claim 22, further comprising a second deformable
2 membrane at least partially disposed over the second expansible member in the expanded
3 configuration

1 25. The device of claim 24, further comprising ribs on a surface of the
2 second deformable membrane.

1 26. The device of claim 19, wherein the second expansible member has a
2 length in a range from about 0.1 inch to about 2.0 inches.

1 27. The device of claim 19, wherein the first deformable membrane
2 comprises a spherical shape when the first expansible member is in the expanded
3 configuration.

1 28. The device of claim 19, further comprising a reference stop disposed
2 between the first deformable membrane and the distal end of the tubular member.

1 29. A method for sealing a puncture site:
2 providing an expansible device having a tubular member, a first expansible
3 member disposed on a distal end of the tubular member, a first deformable membrane at least
4 partially disposed over the first expansible member in an expanded configuration, and a
5 second expansible member disposed proximal the first expansible member on the distal end
6 of the tubular member;

7 inserting the expansible device in the puncture site;

8 deploying the first expansible member to an expanded configuration
9 comprising a spherical shape;

10 deploying the second expansible member to an expanded configuration
11 comprising a cylindrical shape.

1 30. The method of claim 29, wherein the first and second expansible
2 members are deployed sequentially.

1 31. The method of claim 29, wherein the first and second expansible
2 members are deployed simultaneously.

1 32. The method of claim 29, wherein the first expansible member is
2 deployed against a blood vessel wall.

1 33. The method of claim 29, wherein the second expansible member is
2 deployed against a tissue tract.

1 34. The method of claim 29, wherein deploying the second expansible
2 membrane comprises inflating the second expansible member with a predetermined volume
3 of air.